Mini User Guide

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Product notice

This user guide describes features that are common to most models. Some features may not be available on your Mini.

To obtain the latest information in the *Mini User Guide*, go to the HP Web site at http://www.hp.com/support.

Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Hardware features

Identifying the hardware

Components included with the computer may vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

To see a list of hardware installed in the computer, follow these steps:

1. Select **Start > My Computer**.
2. In the left pane of the System Tasks window, select **View system information**.
3. Select **Hardware** tab **> Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

Top components

TouchPad

Component		Description
(1)	TouchPad*	Moves the pointer and selects or activates items on the screen.

Component		Description
(2)	Left TouchPad button*	Functions like the left button on an external mouse.
(3)	Right TouchPad button*	Functions like the right button on an external mouse.
(4)	TouchPad scroll zone	Scrolls up or down.

*This table describes factory settings. To view or change pointing device preferences, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Lights

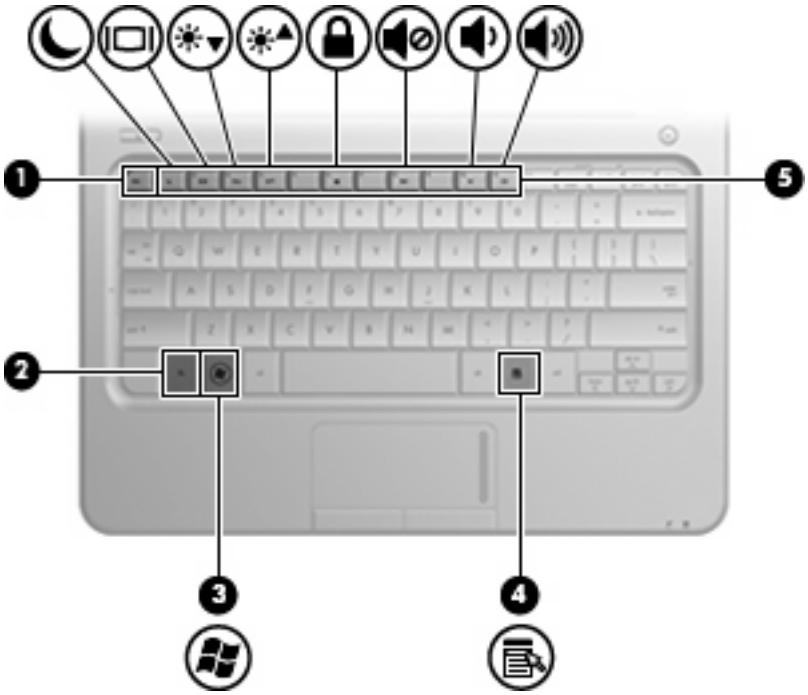
Component			Description
(1)		Caps lock light	On: Caps lock is on.
(2)		Power light	• On: The computer is on. • Blinking: The computer is in Standby. • Off: The computer is off or in Hibernation.
(3)		Wireless light	• On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. • Off: All wireless devices are off.

Buttons

Component		Description
(1)	Power button*	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Standby. • When the computer is in Standby, press the button briefly to exit Standby. • When the computer is in Hibernation, press the button briefly to exit Hibernation. If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, select **Start > Control Panel > System and Security > Power Options**.
(2)	Wireless button	Turns the wireless feature on or off but does not create a wireless connection. **NOTE:** To establish a wireless connection, a wireless network must already be set up.

*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.

Keys



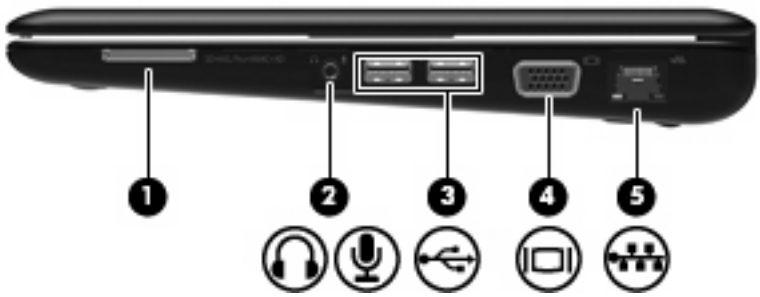
Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key.
(3)	Windows® logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

Front components

Component		Description
(1)	Speakers (2)	Produce sound.

Component		Description
(2)	Battery light	• On: A battery is charging. • Blinking: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(3)	Drive light	Blinking: The hard drive or flash drive is being accessed.

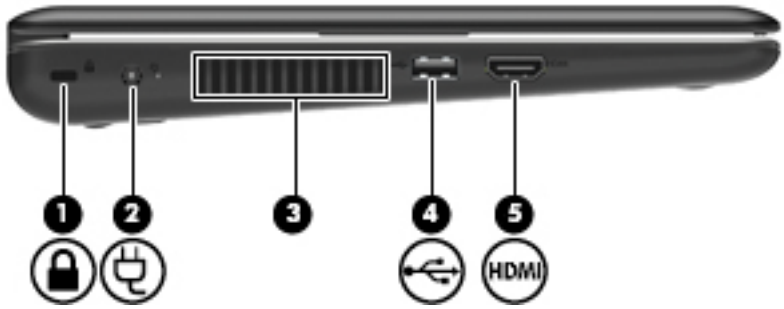
Right-side components



Component		Description
(1)	Digital Media Slot	Supports the following optional digital card formats: • Memory Stick (MS) • Memory Stick Pro (MS/Pro) • MultiMediaCard (MMC) • Secure Digital (SD) Memory Card • xD-Picture card
(2)	Audio-out (headphone) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. The audio component cable must have a 4-conductor connector.
(3)	USB ports (2)	Connect optional USB devices.

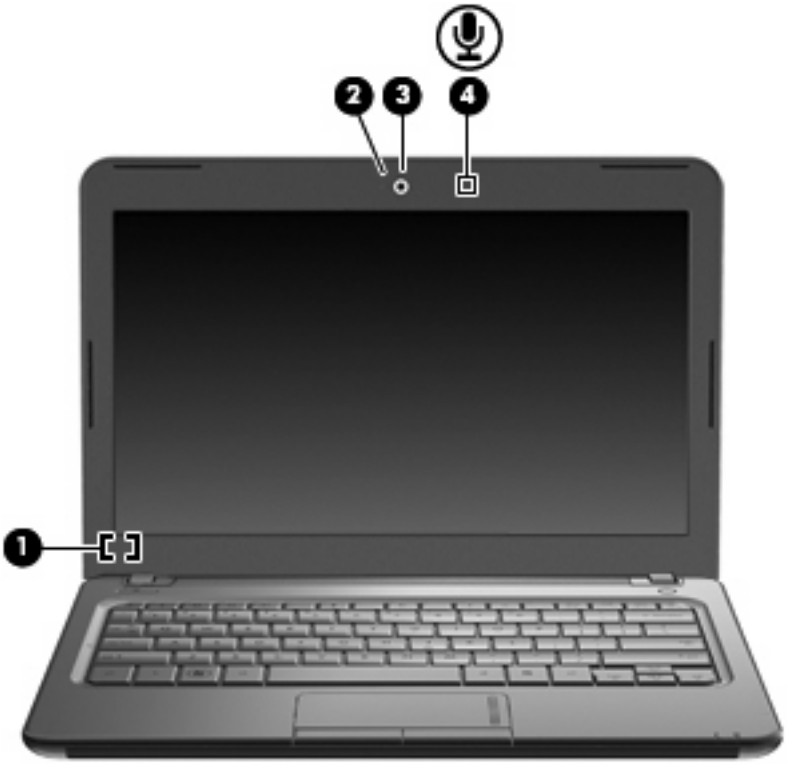
Component		Description
(4)	External monitor port	Connects an external VGA monitor or projector.
(5)	RJ-45 (network) jack	Connects a network cable.

Left-side components



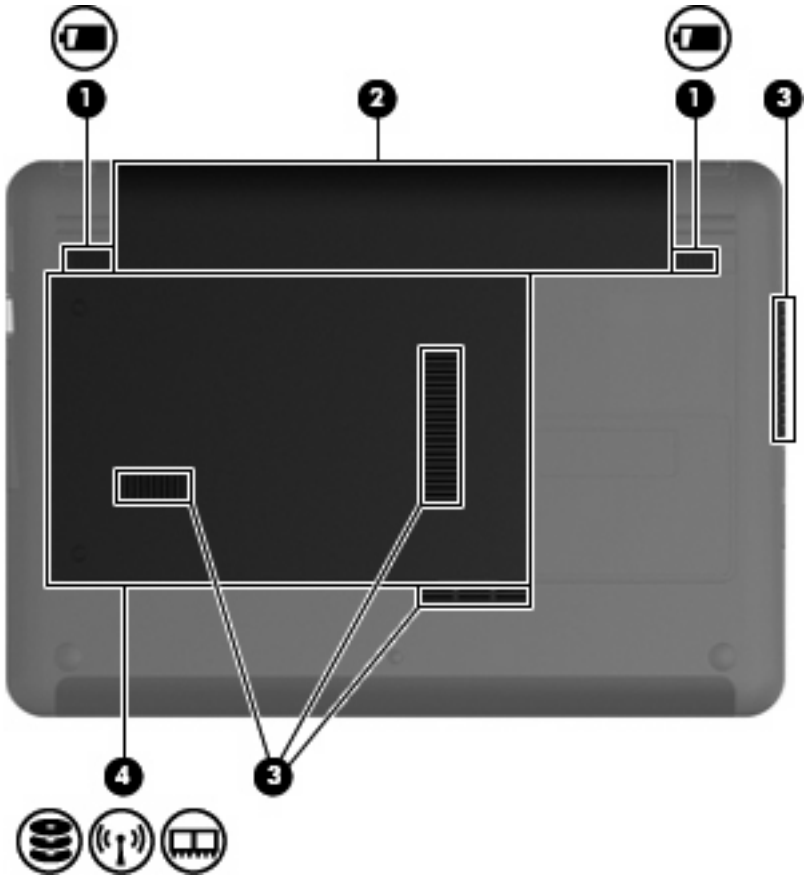
Component		Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2)	Power connector	Connects an AC adapter.
(3)	Vent	Enables airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	USB port	Connects an optional USB device.
(5)	HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component. **NOTE:** Depending on your computer model, the computer may include an HDMI port or a USB port at this location.

Display components



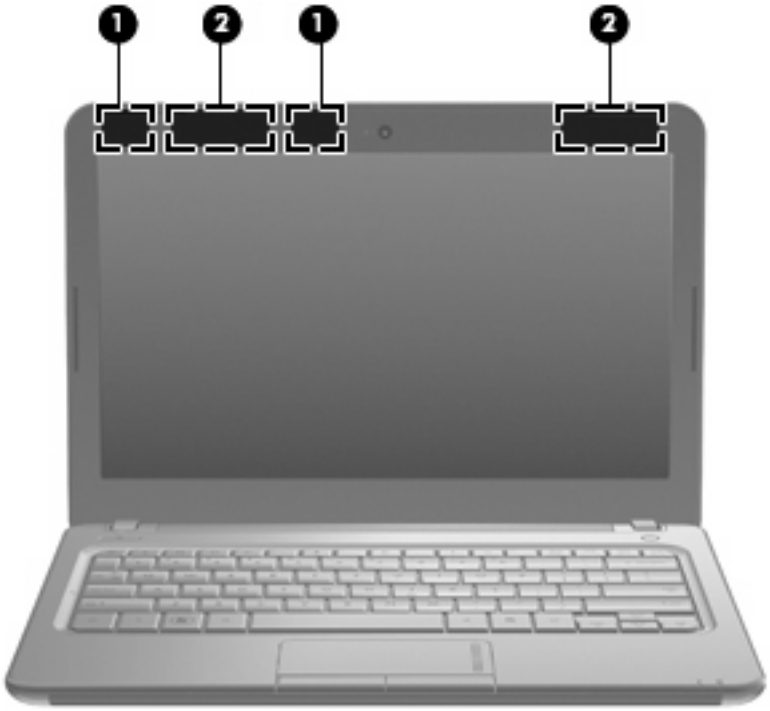
Component		Description
(1)	Internal display switch	Turns off the display if the display is closed while the power is on.
(2)	Webcam light	On: The webcam is in use.
(3)	Webcam	Captures still photographs and videos. **NOTE:** To capture videos, you must install additional webcam software.
(4)	Internal microphone	Records sound.

Bottom components



Component		Description
(1)	Battery release latches (2)	Release the battery from the battery bay.
(2)	Battery bay	Holds the battery.
(3)	Vents (4)	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(4)	Hard drive bay	Contains the hard drive, the wireless LAN module slot, and the memory module slot. **CAUTION:** To prevent an unresponsive system and the display of a warning message, replace the WLAN module with only a module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact technical support through Help and Support.

Wireless antennas



Component		Description
(1)	WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLANs).
(2)	WWAN antennas (2) (select models only)*	Send and receive wireless signals to communicate with wireless wide-area networks (WWANs).

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in Help and Support.

Additional hardware components

Component		Description
(1)	Power cord*	Connects an AC adapter to an AC outlet.
(2)	Battery*	Powers the computer when the computer is not plugged into external power.
(3)	AC adapter	Converts AC power to DC power.

*Batteries and power cords vary in appearance by region and country.

Identifying the labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

- Service tag—Provides important information including the following:

  - Product name **(1)**. This is the product name affixed to the front of your computer.
  - Serial number (s/n) **(2)**. This is an alphanumeric identifier that is unique to each product.
  - Part Number/Product number (p/n) **(3)**. This number provides specific information about the hardware components of the product. The part number helps a service technician to determine what components and parts are needed.

- Model description **(4)**. This is the alphanumeric identifier you use to locate documents, drivers, and support for your computer.
- Warranty period **(5)**. This number describes the duration (in years) of the warranty period for this computer.

Have this information available when you contact technical support. The service tag label is affixed to the bottom of the computer.

- Microsoft® Certificate of Authenticity—Contains the Windows® Product Key. You may need the Product Key to update or troubleshoot the operating system. This certificate is affixed to the bottom of the computer.
- Regulatory label—Provides regulatory information about the computer, including the following:
  - Information about optional wireless devices and the approval markings of some of the countries or regions in which the devices have been approved for use. An optional device may be a wireless local area network (WLAN) device. You may need this information when traveling internationally.
  - The serial number of your HP Mobile Broadband Module.

  The regulatory label is affixed inside the battery bay.

2 Using HP QuickWeb software (select models only)

HP QuickWeb software is an optional, instant-on environment that is separate from the Windows operating system. QuickWeb allows you to rapidly access certain programs without the need to start the operating system. You will enjoy this feature if you browse the Internet, view and send e-mail, view digital photos, listen to music, or keep in touch through instant messages or Skype. QuickWeb is ready to go within seconds of pressing the power button.

QuickWeb includes the following features:

- Web browser—Search and browse the Internet, and create links to your favorite Web sites.
- Music Player—Listen to your favorite music and create playlists.
- Photo Viewer—Browse through photos, create albums, and view slide shows.
- Skype (select models only)—Skype is a voice over Internet protocol (VoIP) that lets you communicate free of charge with other Skype users. With Skype, you can have a conference call or a video chat with one or more people at a time. You can also make long-distance phone calls to land lines.
- Chat—Chat with friends on multiple instant messaging programs, such as Google Talk, Windows Live Messenger, Yahoo! Messenger, and other providers.
- Web calendar—Display, edit, and organize your schedule using your favorite online calendar program.
- Web e-mail—View and send e-mail using Yahoo, Gmail, and other Web e-mail providers.

NOTE: For information on using QuickWeb, refer to the *Notebook Essentials* guide included with your computer.

3 Wireless and local area network

Using wireless devices

Wireless technology transfers data across radio waves instead of wires. Your computer may be equipped with one or more of the following wireless devices:

- Wireless local area network (WLAN) device—Connects the computer to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, each mobile wireless device communicates with a wireless router or a wireless access point.
- HP Mobile Broadband Module—A wireless wide area network (WWAN) device that provides access to information wherever mobile network operator service is available. In a WWAN, each mobile device communicates to a mobile network operator's base station. Mobile network operators install networks of base stations (similar to cell phone towers) throughout large geographic areas, effectively providing coverage across entire states, regions, or even countries.
- Bluetooth® device—Creates a personal area network (PAN) to connect to other Bluetooth-enabled devices such as computers, phones, printers, headsets, speakers, and cameras. In a PAN, each device communicates directly with other devices, and devices must be relatively close together—typically within 10 meters (approximately 33 feet) of each other.

Computers with WLAN devices support one or more of the following IEEE industry standards:

- 802.11b, the first popular standard, supports data rates of up to 11 Mbps and operates at a frequency of 2.4 GHz.
- 802.11g supports data rates of up to 54 Mbps and operates at a frequency of 2.4 GHz. An 802.11g WLAN device is backward compatible with 802.11b devices, so they can operate on the same network.
- 802.11a supports data rates of up to 54 Mbps and operates at a frequency of 5 GHz.

NOTE: 802.11a is not compatible with 802.11b and 802.11g.

- 802.11n supports data rates of up to 450 Mbps and may operate at 2.4 GHz or 5 GHz, making it backward compatible with 802.11a, b, and g.

For more information on wireless technology, refer to the information and Web site links provided in Help and Support.

Identifying wireless and network status icons

Icon	Name	Description
	Wireless (connected)	Identifies the location of the wireless light and the wireless function key on the computer. Also identifies the Wireless Assistant software on the computer and indicates that one or more of the wireless devices are on.
	Wireless (disconnected)	Identifies the Wireless Assistant software on the computer and indicates that all of the wireless devices are off.
	Wireless network connection (connected)	Indicates that one or more of your WLAN devices are connected to the network.
	Wireless network connection (disconnected)	Indicates that one or more of your WLAN devices are not connected to a network.
	Network status (connected)	Indicates that one or more of your LAN drivers are installed and one or more LAN devices are connected to the network.
	Network status (disconnected)	Indicates that one or more of your LAN drivers are installed but no LAN devices are connected to the network.

Using the wireless controls

You can control the wireless devices in your computer using these features:

- Wireless button or wireless switch
- HP Connection Manager software (select models only)
- Wireless Assistant software (select models only)
- Operating system controls

Using the wireless button

The computer has a wireless button, one or more wireless devices, and one or two wireless lights, depending on the model. All of the wireless devices on your computer are enabled at the factory, so the wireless light is on (blue) when you turn on the computer.

The wireless light indicates the overall power state of your wireless devices, not the status of individual devices. If the wireless light is blue, at least one wireless device is on. If the wireless light is off, all wireless devices are off.

NOTE: On some models, the wireless light is amber when all wireless devices are off.

Because the wireless devices are enabled at the factory, you can use the wireless button to turn on or turn off the wireless devices simultaneously. Individual wireless devices can be controlled through Wireless Assistant software (select models only).

Using HP Connection Manager software (select models only)

Connection Manager allows you to manage your Internet profiles, SMS (Short Message Service) messaging, connection devices and methods, and edit additional settings.

To start Connection Manager:

1. Click the **HP Connection Manager** icon in the notification area, at the far right of the taskbar.
2. Click **Connect** to turn on the wireless wide area network (WWAN) feature and use HP Mobile Broadband.

   NOTE: Connection time varies. After the connection is established, a notification message is displayed in the Connection Manager window.

NOTE: Connection Manager is minimized when first opened. To maximize the Connection Manager window and view more information on connectivity status, click **Details**.

For more details about using Connection Manager, refer to the Connection Manager software Help.

Using Wireless Assistant software (select models only)

A wireless device can be turned on or off using the Wireless Assistant software. If a wireless device is disabled in Setup Utility, it must be reenabled in Setup Utility before it can be turned on or off using Wireless Assistant.

NOTE: Enabling or turning on a wireless device does not automatically connect the computer to a network or a Bluetooth-enabled device.

To view the state of the wireless devices, click the **Show hidden icons** icon, the arrow at the left of the notification area, and position the mouse pointer over the wireless icon.

If the wireless icon is not displayed in the notification area, complete the following steps to change Wireless Assistant properties:

1. Select **Start > Control Panel > Network and Internet Connections > HP Wireless Assistant**.
2. Click **Properties**.
3. Select the check box next to **Wireless Assistant icon in notification area**.
4. Click **Apply**.

For more information, refer to the Wireless Assistant software Help:

1. Open Wireless Assistant by clicking the wireless icon in Windows Mobility Center.
2. Click the **Help** button.

Using operating system controls

Some operating systems also offer a way to manage integrated wireless devices and the wireless connection. For example, Windows® Network Connections allows you to set up a connection, connect to a network, manage wireless networks, and diagnose and repair connections.

To access the Network Connections, select **Start > Control Panel > Network and Internet Connections > Network Connections**.

For more information, select **Start > Help and Support**.

Using a WLAN

With a WLAN device, you can access a wireless local area network (WLAN), which is composed of other devices and accessories that are linked by a wireless router or a wireless access point.

NOTE: The terms *wireless router* and *wireless access point* are often used interchangeably.

- A large-scale WLAN, such as a corporate or public WLAN, typically uses wireless access points that can accommodate a large number of devices and accessories and can separate critical network functions.
- A home or small office WLAN typically uses a wireless router, which allows several wireless and wired computers to share an Internet connection, a printer, and files without requiring additional pieces of hardware or software.

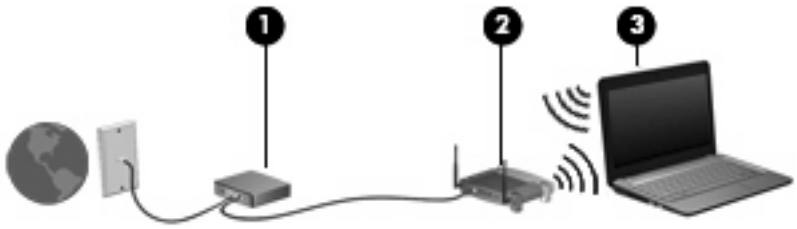
To use the WLAN device in your computer, you must connect to a WLAN infrastructure (provided through a service provider or a public or corporate network).

Setting up a WLAN

To set up a WLAN and connect to the Internet, you need the following equipment:

- A broadband modem (either DSL or cable) **(1)** and high-speed Internet service purchased from an Internet service provider (ISP)
- A wireless router (purchased separately) **(2)**
- The computer, equipped with a wireless device **(3)**

The illustration below shows an example of a wireless network installation that is connected to the Internet.



As your network grows, additional wireless and wired computers can be connected to the network to access the Internet.

For help in setting up your WLAN, refer to the information provided by your router manufacturer or your ISP.

Protecting your WLAN

It is essential to understand that because the WLAN standard was designed with only limited security capabilities—basically to foil casual eavesdropping rather than more powerful forms of attack—WLANs are vulnerable to well-known and well-documented security weaknesses.

WLANs in public areas, or “hotspots,” like coffee shops and airports may not provide any security. New technologies are being developed by wireless manufacturers and hotspot service providers that make the public environment more secure and anonymous. If you are concerned about the security of your computer in a hotspot, limit your network activities to noncritical e-mail and basic Internet surfing.

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. The common security levels are Wi-Fi Protected Access (WPA)-Personal and Wired Equivalent Privacy (WEP). Because wireless radio signals travel outside the network, other WLAN devices can pick up unprotected signals and either connect to your network (uninvited) or capture information being sent across it. However, you can take precautions to protect your WLAN:

- **Use a wireless transmitter with built-in security.**

  Many wireless base stations, gateways, or routers provide built-in security features such as wireless security protocols and firewalls. With the correct wireless transmitter, you can protect your network from the most common wireless security risks.

- **Work behind a firewall.**

  A firewall is a barrier that checks both data and requests for data that are sent to your network, and discards any suspicious items. Firewalls are available in many varieties, both software and hardware. Some networks use a combination of both types.

- **Use wireless encryption.**

  A variety of sophisticated encryption protocols is available for your WLAN. Find the solution that works best for your network security:

  - **Wired Equivalent Privacy (WEP)** is a wireless security protocol that encodes or encrypts all network data before it is transmitted using a WEP key. Usually, you can allow the network to assign the WEP key. Alternatively, you can set up your own key, generate a different key, or choose other advanced options. Without the correct key, others are not able to use the WLAN.

  - **WPA (Wi-Fi Protected Access)**, like WEP, uses security settings to encrypt and decrypt data that is transmitted over the network. However, instead of using one static security key for encryptions as WEP does, WPA uses “temporal key integrity protocol” (TKIP) to dynamically generate a new key for every packet. It also generates different sets of keys for each computer on the network.

Connecting to a WLAN

To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on. If it is on, the wireless light is blue. If the wireless light is amber, slide the wireless switch.
2. Select **Start > Connect to**.
3. Select your WLAN from the list, and then type the network security key, if required.

   - If the network is unsecured, meaning that anyone can access the network, a warning is displayed. Click **Connect Anyway** to accept the warning and complete the connection.
   - If the network is a security-enabled WLAN, you are prompted to enter a network security key, which is a security code. Type the code, and then click **Connect** to complete the connection.

NOTE: If no WLANs are listed, you are out of range of a wireless router or access point.

NOTE: If you do not see the network you want to connect to, click **Set up a connection or network**. A list of options is displayed. You can choose to manually search for and connect to a network or to create a new network connection.

4. After the connection is made, place the mouse pointer over the wireless network connection icon in the notification area, at the far right of the taskbar, to verify the name, speed, strength, and status of the connection.

NOTE: The functional range (how far your wireless signals travel) depends on WLAN implementation, router manufacturer, and interference from other electronic devices or structural barriers such as walls and floors.

More information about using a WLAN is available through the following resources:

- Information from your ISP and the manufacturer's instructions included with your wireless router and other WLAN equipment
- Information and Web site links provided in Help and Support

For a list of public WLANs near you, contact your ISP or search the Web. Web sites that list public WLANs include Cisco Internet Mobile Office Wireless Locations, Hotspotlist, and Geektools. Check with each public WLAN location for cost and connection requirements.

Roaming to another network

When you move your computer within range of another WLAN, Windows attempts to connect to that network. If the attempt is successful, your computer is automatically connected to the new network. If Windows does not recognize the new network, follow the same procedure you used initially to connect to your WLAN.

Using HP Mobile Broadband (select models only)

An HP Mobile Broadband Module is a wireless wide area network (WWAN) device that provides access to information wherever mobile network operator service is available. Using HP Mobile Broadband requires a network service provider (called a *mobile network operator*), which in most cases is a mobile phone network operator. Coverage for HP Mobile Broadband is similar to mobile phone voice coverage.

When used with mobile network operator service, HP Mobile Broadband gives you the freedom to stay connected to the Internet, send e-mail, or connect to your corporate network whether you are on the road or outside the range of Wi-Fi hotspots.

HP Mobile Broadband supports the following technologies:

- HSPA (High Speed Packet Access), which provides access to networks based on the Global System for Mobile Communications (GSM) telecommunications standard.
- EV-DO (Evolution Data Optimized), which provides access to networks based on the code division multiple access (CDMA) telecommunications standard.

You may need the HP Mobile Broadband Module serial number to activate mobile broadband service. The serial number is printed on a label inside the battery bay of your computer.

Some mobile network operators require the use of a subscriber identity module (SIM). A SIM contains basic information about you, such as a personal identification number (PIN), as well as network information. Some computers include a SIM that is preinstalled in the battery bay. If the SIM is not preinstalled, it may be included with the HP Mobile Broadband information provided with your computer, or the mobile network operator may provide it separately from the computer.

For information on inserting and removing the SIM, refer to the “Inserting a SIM” and “Removing a SIM” sections in this chapter.

For information on HP Mobile Broadband and how to activate service with a preferred mobile network operator, refer to the HP Mobile Broadband information included with your computer. For additional information, see the HP Web site at http://www.hp.com/go/mobilebroadband (US only).

Inserting a SIM

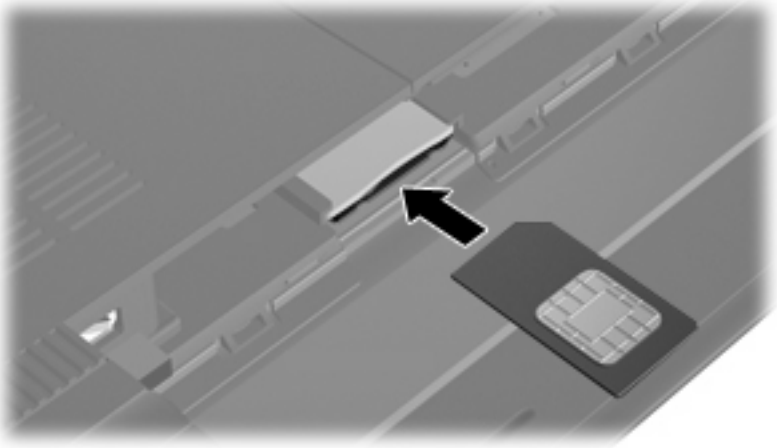
To insert a SIM:

1. Shut down the computer. If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.

△ **CAUTION:** When inserting a SIM, position the card with the slanted corner as shown in the illustration. If a SIM is inserted backwards or upside down, the battery may not snap into place properly and could damage the SIM and the SIM connector.

To prevent damage to the connectors, use minimal force when inserting a SIM.

7. Insert the SIM into the SIM slot, and gently push the SIM into the slot until it is firmly seated.



8. Replace the battery.

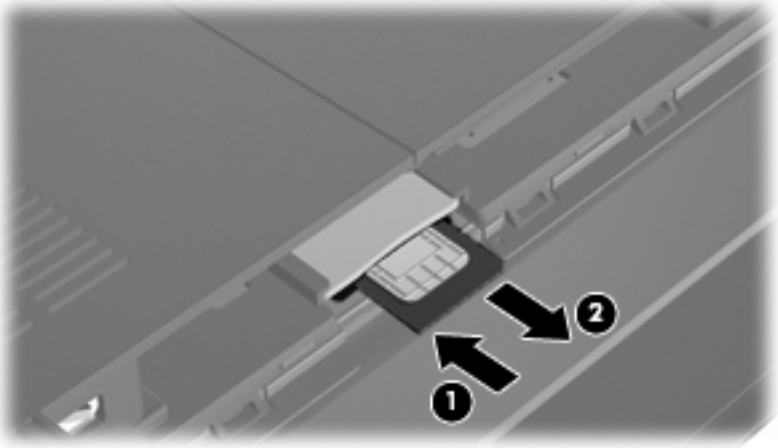
NOTE: HP Mobile Broadband is disabled if the battery is not replaced.

9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the computer.

Removing a SIM

To remove a SIM:

1. Shut down the computer. If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.
7. Press in on the SIM **(1)**, and then remove it from the slot **(2)**.



8. Replace the battery.
9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the computer.

Using Bluetooth wireless devices

A Bluetooth device provides short-range wireless communications that replace the physical cable connections that traditionally link electronic devices such as the following:

- Computers (desktop, notebook, PDA)
- Phones (cellular, cordless, smart phone)
- Imaging devices (printer, camera)
- Audio devices (headset, speakers)

Bluetooth devices provide peer-to-peer capability that allows you to set up a personal area network (PAN) of Bluetooth devices. For information on configuring and using Bluetooth devices, refer to the Bluetooth software Help.

Bluetooth and Internet Connection Sharing (ICS)

HP does **not** recommend setting up one computer with Bluetooth as a host and using it as a gateway through which other computers may connect to the Internet. When two or more computers are connected using Bluetooth, and Internet Connection Sharing (ICS) is enabled on one of the computers, the other computers may not be able to connect to the Internet using the Bluetooth network.

The strength of Bluetooth is in synchronizing information transfers between your computer and wireless devices including cellular phones, printers, cameras, and PDAs. The inability to consistently connect two or more computers to share the Internet through Bluetooth is a limitation of Bluetooth and the Windows operating system.

Troubleshooting wireless connection problems

Some possible causes for wireless connection problems include the following:

- Wireless device is not installed correctly or has been disabled.
- Wireless device or router hardware has failed.
- Network configuration (SSID or security) has been changed.
- Wireless device encountered interference from other devices.

NOTE: Wireless networking devices are included with select computer models only. If wireless networking is not listed in the feature list on the side of the original computer package, you may add wireless networking capability to the computer by purchasing a wireless networking device.

Before working your way through the sequence of possible solutions to your network connection problem, be sure that device drivers are installed for all wireless devices.

Use the procedures in this chapter to diagnose and repair a computer that does not connect to the network you want to use.

Cannot create a WLAN connection

If you have a problem connecting to a WLAN, confirm that the integrated WLAN device is properly installed on your computer:

1. Select **Start > My Computer**.
2. Right-click in the My Computer window.
3. Select **Properties > Hardware > Device Manager > Network Adapters**.
4. Identify the WLAN device from the Network adapters list. The listing for a WLAN device may include the term *wireless*, *wireless LAN*, *WLAN*, or *802.11*.

   If no WLAN device is listed, either your computer does not have an integrated WLAN device, or the driver for the WLAN device is not properly installed.

For more information on troubleshooting WLANs, refer to the Web site links provided in Help and Support.

Cannot connect to a preferred network

Windows can automatically repair a corrupted WLAN connection:

- If there is a network status icon in the notification area, at the far right of the taskbar, right-click the icon, and then click **Repair** from the menu.

  Windows resets your network device and attempts to reconnect to one of the preferred networks.

- If an “x” is superimposed over the network status icon, one or more of your WLAN or LAN drivers are installed but the device is not connected.

- If there is no network status icon in the notification area, follow these steps:

  1. Select **Start > Control Panel > Network and Internet Connections > Network Connections**.

  2. Click one of the connections.

  3. In the left pane, click **Repair this connection**.

     The Network connections window is displayed, and Windows resets your network device and attempts to reconnect to one of the preferred networks.

Current network security codes are unavailable

If you are prompted for a network key or a name (SSID) when connecting to a WLAN, the network is protected by security. You must have the current codes to make a connection on a secure network. The SSID and network key are alphanumeric codes that identify your computer to the network.

- For a network connected to your personal wireless router, review the router user guide for instructions on setting up the same codes on both the router and the WLAN device.

- For a private network, such as a network in an office or at a public Internet chat room, contact the network administrator to obtain the codes, and then enter the codes when prompted to do so.

  Some networks change the SSID or network keys used in their routers or access points on a regular basis to improve security. You must change the corresponding code in your computer accordingly.

If you are provided with new wireless network keys and SSID for a network, and if you have previously connected to that network, follow the steps below to connect to the network:

1. Select **Control Panel > Network and Internet Connections > Network Connections**.

   A list showing the available WLANs is displayed. If you are in a hotspot where several WLANs are active, several are displayed.

2. Right-click the network, and then click **Properties**.

3. Click the **Wireless Networks** tab.

4. Select the network, and then click **Properties**.

   NOTE: If the network you want is not listed, check with the network administrator to be sure that the router or access point is operating.

5. Click the **Association** tab, and then enter the correct wireless encryption data into the **Network key** field.

6. Click **OK** to save these settings.

WLAN connection is very weak

If the connection is very weak, or if your computer cannot make a connection to a WLAN, minimize interference from other devices, as follows:

- Move your computer closer to the wireless router or access point.
- Temporarily disconnect devices such as a microwave, cordless phone, or cellular phone to be sure that other devices are not interfering.

If the connection does not improve, try forcing the device to reestablish all connection values:

1. Select **Control Panel > Network and Internet Connections > Network Connections**.
2. Right-click the network, and then click **Properties**.
3. Click the **Wireless Networks** tab.

   A list showing the available WLANs is displayed. If you are in a hotspot where several WLANs are active, several are displayed.
4. Select a network, and then click **Remove**.

Cannot connect to the wireless router

If you are trying to connect to the wireless router and are unsuccessful, reset the wireless router by removing power from the router for 10 to 15 seconds.

If the computer still cannot make a connection to a WLAN, restart the wireless router. For details, refer to the router manufacturer's instructions.

Connecting to a local area network (LAN)

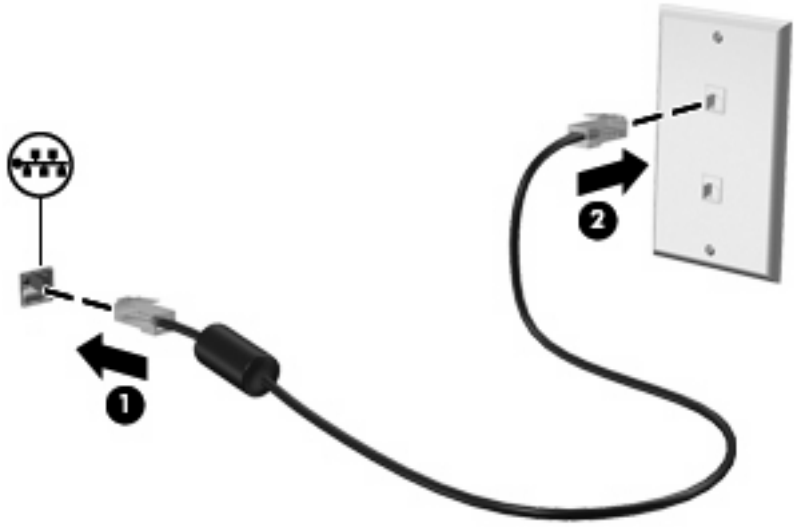
Connecting to a local area network (LAN) requires an 8-pin, RJ-45 network cable (purchased separately). If the network cable contains noise suppression circuitry **(1)**, which prevents interference from TV and radio reception, orient the circuitry end of the cable **(2)** toward the computer.

To connect the network cable:

⚠ **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem cable or telephone cable into an RJ-45 (network) jack.

1. Plug the network cable into the network jack **(1)** on the computer.

2. Plug the other end of the cable into a network wall jack **(2)**.



4 Multimedia

Multimedia features

Your computer includes multimedia features that allow you to listen to music, watch movies, and view pictures. Your computer may include the following multimedia components:

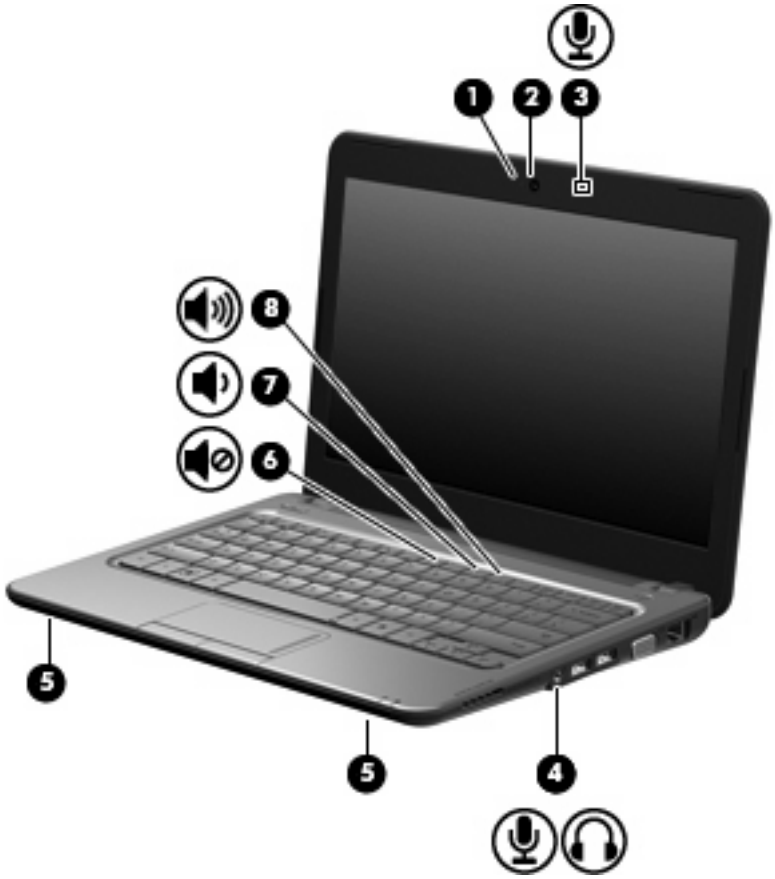
- Integrated speakers for listening to music
- Integrated microphone for recording your own audio
- Integrated webcam that allows you to capture photographs and videos
- Preinstalled multimedia software that allows you to play and manage your music, movies, and pictures

NOTE: Your computer may not include all of the components listed.

The following sections explain how to identify and use the multimedia components included with your computer.

Identifying your multimedia components

The following illustration and table describe the multimedia features of the computer.



Component			Description
(1)		Webcam light	On: The webcam is in use.
(2)		Webcam	Captures still photographs and videos. **NOTE:** To capture videos, you must install additional webcam software.
(3)		Internal microphone	Records sound.
(4)		Audio-out (headphone) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety and Environmental Notices*. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. The audio component must have a 4-conductor connector.
(5)		Speakers (2)	Produce sound.
(6)		Volume mute hotkey	Mutes speaker sound when pressed in combination with the fn key.

Component			Description
(7)		Volume down hotkey	Decreases speaker volume when pressed in combination with the fn key.
(8)		Volume up hotkey	Increases speaker volume when pressed in combination with the fn key.

Adjusting the volume

You can adjust the volume using the following controls:

- Computer volume hotkey—A combination of the fn key **(1)** and either the f8 **(2)**, f10 **(3)**, or f11 **(4)** function key:
  - To mute or restore volume, press fn+f8.
  - To decrease volume, press fn+f10.
  - To increase volume, press fn+f11.

- Windows® volume control:

  a. Click the **Volume** icon in the notification area, at the far right of the taskbar.

  b. Increase or decrease the volume by moving the slider up or down. Select the **Mute** check box to mute the volume.

  – or –

  a. Double-click the **Volume** icon in the notification area.

  b. In the Volume Control column, you can increase or decrease the volume by moving the **Volume** slider up or down. You can also adjust the balance or mute the volume.

If the Volume icon is not displayed in the notification area, follow these steps to add it:

a. Select **Start > Control Panel > Sounds, Speech, and Audio Devices > Sounds and Audio Devices > Volume** tab.

b. Select the **Place volume icon in the taskbar** check box.

c. Click **Apply**.

- Program volume control:

  Volume can also be adjusted within some programs.

Multimedia software

Your computer includes preinstalled multimedia software that allows you to play music, watch movies, and view pictures.

Using preinstalled multimedia software

To locate other preinstalled multimedia software:

▲ Select **Start > All Programs**, and then open the multimedia program you want to use. For example, if you want to use Windows Media Player (select models only), click **Windows Media Player**.

NOTE: Some programs may be located in subfolders.

Installing multimedia software from the Internet

▲ To install multimedia software from the Internet, go to the software manufacturer's Web site and follow the instructions.

NOTE: Software downloaded from the Internet may contain viruses. Refer to the "Security" chapter for more information.

Audio

Your computer has a variety of audio features that allow you to:

- Play music using your computer speakers and/or connected external speakers.
- Record sound using the internal microphone or an optional external headset microphone.
- Download music from the Internet.
- Create multimedia presentations using audio and images.
- Transmit sound and images with instant messaging programs.

Connecting external audio devices

⚠ **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety and Environmental Notices*.

To connect external devices such as external speakers, headphones, or a headset microphone, refer to the information provided with the device. For best results, remember the following tips:

- Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
- Be sure that the device cable is securely connected to the correct jack on your computer. (Cable connectors are normally color-coded to match the corresponding jacks on the computer.)
- Be sure to install any drivers required by the external device.

NOTE: A driver is a required program that acts like a translator between the device and the programs that use the device.

Checking your audio functions

To check the system sound on your computer, follow these steps:

1. Select **Start > Control Panel > Sounds, Speech, and Audio Devices > Sounds and Audio Devices**.
2. When the Sound and Audio Device Properties window opens, click the **Sounds** tab. Under **Program events**, select any sound event, such as a beep or alarm, and click the arrow button to check the sound.

   You should hear sound through the speakers or through connected headphones.

To check the record functions of the device, follow these steps:

1. Select **Start > All Programs > Accessories > Entertainment > Sound Recorder**.
2. Click the record button and speak into the microphone. Save the file to your desktop.
3. Open a multimedia program and play back the sound.

NOTE: For best results when recording, speak directly into the microphone and record sound in a setting free of background noise.

- To confirm or change the audio settings on your computer, right-click the **Volume** icon on the taskbar, or select **Start > Control Panel > Sounds, Speech, and Audio Devices > Sounds and Audio Devices**.

Video

Your computer enables you to use a variety of video features:

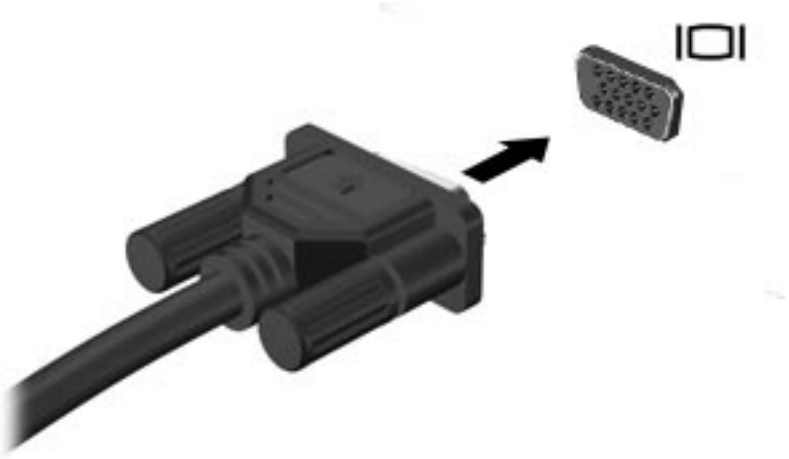
- Watch movies
- Play games over the Internet
- Edit pictures and video to create presentations
- Connect external video devices

Connecting an external monitor or projector

Use a VGA cable (purchased separately) to connect an external display, such as a monitor or projector, to the external monitor port on the computer.

To connect an external monitor or projector:

1. Connect the optional VGA cable to the external monitor port on the computer.



2. Connect the external monitor or projector to the other end of the cable.

NOTE: If a properly connected external monitor or projector does not display a screen image, press fn+f2 to transfer the image to the external display. Repeatedly pressing fn+f2 alternates the screen image between the external display and the computer.

Connecting an HDMI device

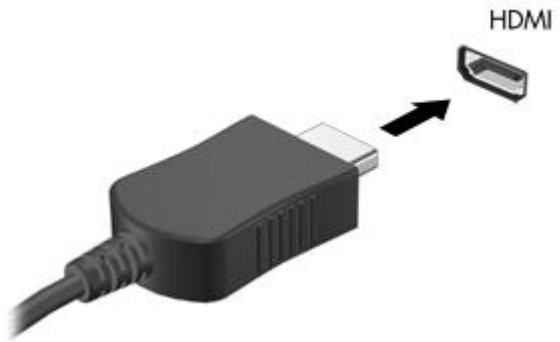
The computer includes an HDMI (High Definition Multimedia Interface) port. The HDMI port connects the computer to an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.

NOTE: To transmit video signals through the HDMI port, you need an HDMI cable (purchased separately).

The computer can support one HDMI device connected to the HDMI port, while simultaneously supporting an image on the computer display or any other supported external display.

To connect a video or audio device to the HDMI port:

1. Connect one end of the HDMI cable to the HDMI port on the computer.



2. Connect the other end of the cable to the video device, according to the device manufacturer's instructions.
3. Press fn+f2 on the computer to switch the image between the display devices connected to the device.

Configuring audio for HDMI (select models only)

To configure HDMI audio, first connect an audio or video device, such as a high-definition TV, to the HDMI port on your computer. Then configure the default audio playback device as follows:

1. Right-click the **Speakers** icon in the notification area, at far right of the taskbar, and then click **Playback devices**.
2. On the **Playback** tab, click either **Digital Output** or **Digital Output Device (HDMI)**.
3. Click **Set Default**, and then click **OK**.

To return audio to the computer speakers, follow these steps:

1. Right-click the **Speakers** icon in the notification area, at far right of the taskbar, and then click **Playback devices**.
2. On the **Playback** tab, click **Speakers**.
3. Click **Set Default**, and then click **OK**.

Webcam

Your computer includes an integrated webcam, located at the top of the display. The webcam is an input device that allows you to capture still photographs and videos.

NOTE: To record videos, you must install additional webcam software.

To access the webcam:

1. Select **Start > My Computer**, and then double-click the camera icon.
2. Click **Take a new picture** to take a picture.

NOTE: The picture is automatically saved in the My Documents folder.

5 Drives and external devices

Drives

Identifying installed drives

Your computer includes a hard drive (with a rotating disc) or a solid state-drive (SSD) with solid-state memory. Because an SSD has no moving parts, it does not generate as much heat as a hard drive.

To view the drives installed on the computer, select **Start > My Computer**.

Handling drives

Drives are fragile computer components that must be handled with care. Refer to the following cautions before handling drives. Additional cautions are included with the procedures to which they apply.

△ **CAUTION:** To reduce the risk of damage to the device, damage to a drive, or loss of information, observe these precautions:

Before you move a computer that is connected to an external hard drive, initiate Standby and allow the screen to clear, or properly disconnect the external hard drive.

Before handling a drive, discharge static electricity by touching the unpainted metal surface of the drive.

Do not touch the connector pins on a removable drive or on the computer.

Handle a drive carefully; do not drop a drive or place items on it.

Before removing or inserting a drive, shut down the computer. If you are unsure whether the computer is off, in Standby, or in Hibernation, turn the computer on and then shut it down through the operating system.

Do not use excessive force when inserting a drive into a drive bay.

Do not type on the keyboard or move the computer while the optical drive (select models only) is writing to a disc. The write process is sensitive to vibration.

When the battery is the only source of power, be sure that the battery is sufficiently charged before writing to media.

Avoid exposing a drive to temperature or humidity extremes.

Avoid exposing a drive to liquids. Do not spray the drive with cleaning products.

Remove media from a drive before removing the drive from the drive bay, or traveling with, shipping, or storing a drive.

If a drive must be mailed, place the drive in a bubble-pack mailer or other suitable protective packaging and label the package “FRAGILE.”

Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. The airport security devices that check carry-on luggage, such as conveyor belts, use X-rays instead of magnetism and will not damage a drive.

Improving hard drive performance

Using Disk Defragmenter

As you use the computer, files on the hard drive become fragmented. Disk Defragmenter consolidates the fragmented files and folders on the hard drive so that the system can run more efficiently.

To run Disk Defragmenter:

1. Select **Start > All Programs > Accessories > System Tools > Disk Defragmenter**.
2. Under **Volume**, click the listing for the hard drive, usually listed as (C:), and then click **Defragment**.

For additional information, access the Disk Defragmenter software Help.

Using Disk Cleanup

Disk Cleanup searches the hard drive for unnecessary files that you can safely delete to free up disk space and help the computer to run more efficiently.

To run Disk Cleanup:

1. Select **Start > All Programs > Accessories > System Tools > Disk Cleanup**.
2. Follow the on-screen instructions.

Replacing the hard drive in the hard drive bay

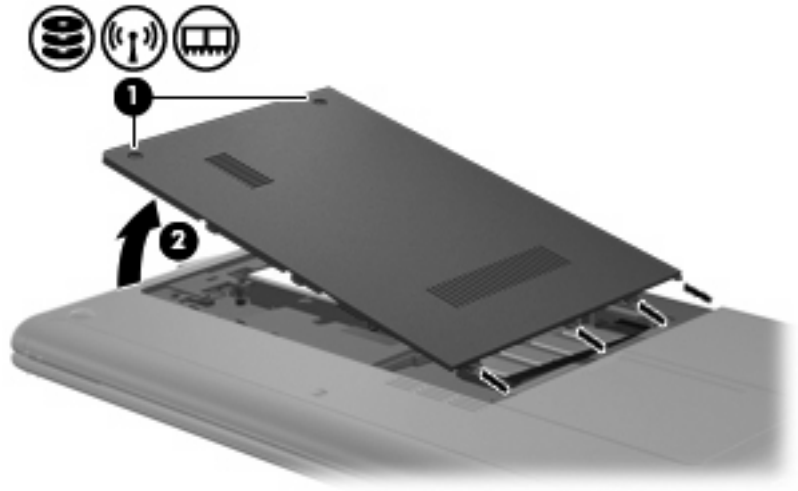
△ **CAUTION:** To prevent information loss or an unresponsive system:

Shut down the computer before removing the hard drive from the hard drive bay. Do not remove the hard drive while the computer is on, in Standby, or in Hibernation.

If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

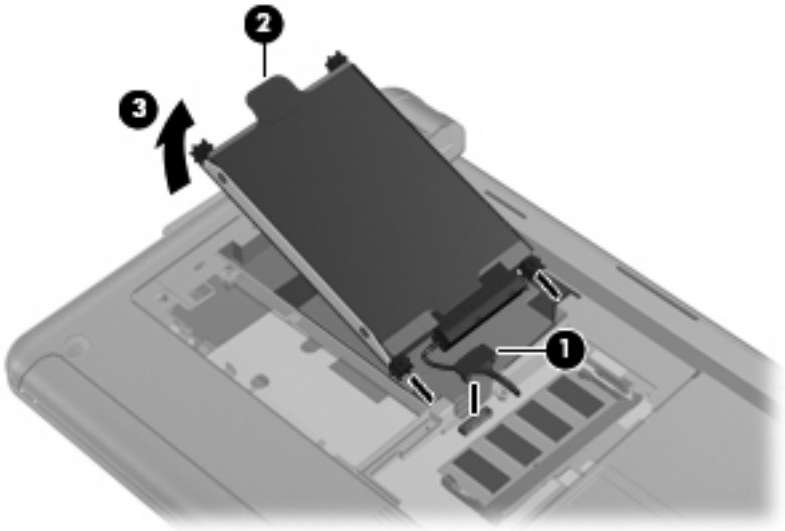
To remove the hard drive:

1. Save your work.
2. Shut down the computer and close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the battery from the computer.
7. With the hard drive bay toward you, loosen the 2 hard drive cover screws **(1)**.
8. Lift the hard drive cover away from the computer **(2)**.



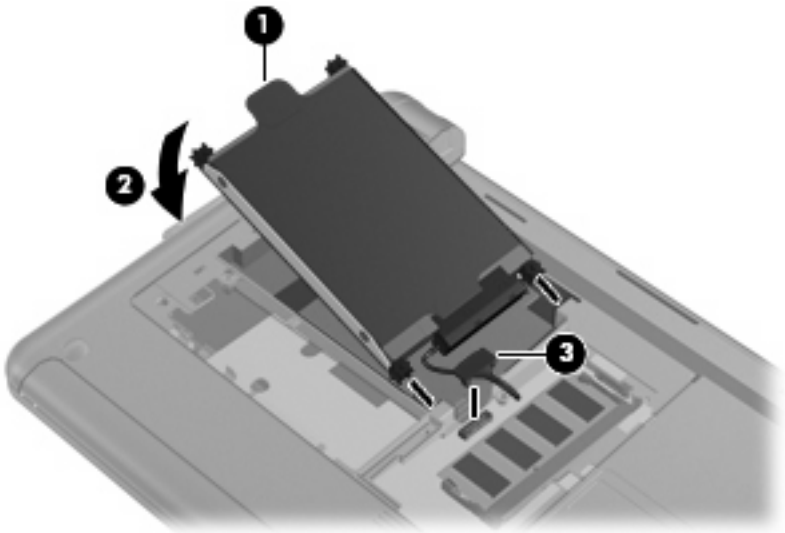
9. Disconnect the hard drive cable **(1)** that secures the hard drive to the computer.

10. Pull the hard drive tab **(2)** up and lift the hard drive **(3)** out of the hard drive bay.



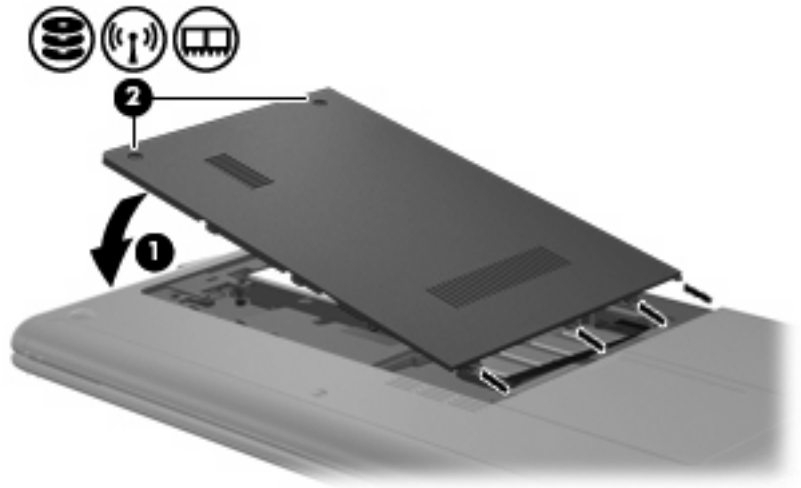
To install a hard drive:

1. Grasp the hard drive tab **(1)** and insert the hard drive **(2)** into the hard drive bay, until the rubber stops slide into place.
2. Reconnect the hard drive cable **(3)**.



3. Align the tabs on the hard drive cover with the notches on the computer, and then close the cover **(1)**.

4. Tighten the 2 hard drive cover screws **(2)**.



Using external drives

Removable external drives expand your options for storing and accessing information.

USB drives include the following types:

- 1.44-megabyte diskette drive
- Hard drive module (a hard drive with an adapter attached)
- DVD-ROM Drive
- DVD/CD-RW Combo Drive
- DVD±RW and CD-RW Combo Drive
- DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive
- DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
- Blu-ray ROM DVD±R/RW SuperMulti DL Drive
- Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive
- HD DVD drive

NOTE: For more information about required software and drivers, or to learn which computer port to use, refer to the manufacturer's instructions.

To connect an external drive to the computer:

CAUTION: To reduce the risk of damage to the equipment when connecting a powered drive, be sure that the AC power cord is unplugged.

1. Connect the drive to the computer.
2. If you are connecting a powered drive, plug the drive power cord into a grounded AC outlet.

To disconnect a powered drive, disconnect it from the computer, and then unplug the AC power cord.

Connecting optional external drives

NOTE: For more information about required software and drivers, or to learn which computer port to use, refer to the manufacturer's instructions.

To connect an external drive to the computer:

CAUTION: To reduce the risk of damage to the equipment when connecting a powered drive, be sure that the drive is turned off and the AC power cord is unplugged.

NOTE: An external optical drive must be connected to the USB port *on the computer*, not to a USB port on another external device, such as a hub or docking station.

1. Connect the drive to the computer.
2. If you are connecting a powered drive, plug the drive power cord into a grounded AC outlet.
3. Turn on the drive.

To disconnect an unpowered external drive, turn off the drive, and then disconnect it from the computer. To disconnect a powered external drive, turn off the drive, disconnect it from the computer, and then unplug the AC power cord.

Sharing optical drives

Although your computer does not have an installed optical drive, you can easily access software, as well as install programs and access data, by sharing an optical drive from another computer that has an optical drive and is on the same wired or wireless network. Sharing drives is a feature of the Windows operating system that allows a drive on another computer to be made available for other people to use on a network.

NOTE: For information on setting up a home network and sharing a drive, refer to Help and Support.

NOTE: Some discs, such as DVD movies and game discs, may be copy-protected and therefore unusable through DVD or CD sharing.

External devices

Using a USB device

Universal Serial Bus (USB) is a hardware interface that can be used to connect an optional external device, such as a USB keyboard, mouse, drive, printer, scanner, or hub. Devices can be connected to the system, an optional docking device, or an optional expansion product.

Some USB devices may require additional support software, which is usually included with the device. For more information about device-specific software, refer to the manufacturer's instructions.

The computer has 3 or 4 USB ports, which support USB 1.0, USB 1.1, and USB 2.0 devices. An optional USB hub, optional docking device, or an optional expansion product provides additional USB ports that can be used with the computer.

Connecting a USB device

△ **CAUTION:** To prevent damage to a USB connector, use minimal force to connect a USB device.

▲ To connect a USB device to the computer, connect the USB cable for the device to the USB port.

You will hear a sound when the device has been detected.

NOTE: When you connect a USB device, you may see a message in the notification area to let you know that the device is recognized by the system.

Removing a USB device

△ **CAUTION:** To prevent loss of information or an unresponsive system, use the following procedure to safely remove the USB device.

CAUTION: To prevent damage to a USB connector, do not pull on the cable to remove the USB device.

To remove a USB device:

1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

NOTE: To display the **Safely Remove Hardware and Eject Media** icon, click the **Show hidden icons** icon (the arrow at the left of in the notification area.

2. Click the name of the device in the list.

NOTE: You are informed that it is safe to remove the hardware device.

3. Remove the device.

Using Digital Media Slot cards

Optional digital cards provide secure data storage and convenient data sharing. These cards are often used with digital media–equipped cameras and PDAs as well as with other computers.

The Digital Media Slot supports the following digital card formats:

- Memory Stick (MS)
- Memory Stick Pro (MS/Pro)
- MultiMediaCard (MMC)
- Secure Digital (SD) Memory Card
- Secure Digital High Capacity (SDHC) Memory Card
- xD-Picture Card (XD)
- xD-Picture Card (XD) Type H
- xD-Picture Card (XD) Type M

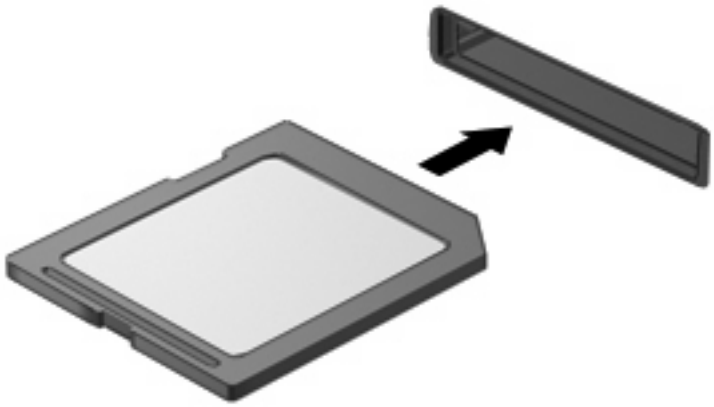
Inserting a digital card

△ **CAUTION:** To avoid damaging the digital card or the computer, do not insert any type of adapter into the Digital Media Slot.

CAUTION: To prevent damage to the digital card connectors, use minimal force to insert a digital card.

1. Hold the digital card label-side up, with the connectors facing the computer.

2. Insert the card into the Digital Media Slot, and then push in on the card until it is firmly seated.



You will hear a sound when the device has been detected, and a menu of options may be displayed.

Stopping and removing a digital card

△ **CAUTION:** To prevent loss of data or an unresponsive system, stop a digital card before removing it.

1. Save your information and close all programs associated with the digital card.

NOTE: To stop a data transfer, click **Cancel** in the operating system Copying window.

2. Stop the digital card:

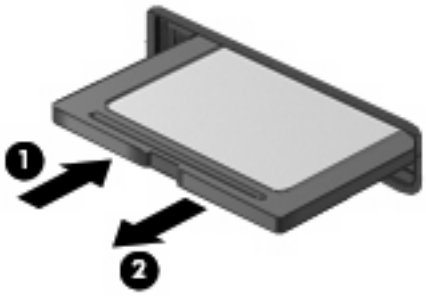
   a. Double-click the **Safely Remove Hardware** icon in the notification area, at the far right of the taskbar.

   NOTE: To display the Safely Remove Hardware icon, click the **Show Hidden Icons** icon (**<** or **<<**) in the notification area.

   b. Click the name of the digital card in the list.

   c. Click **Stop**, and then click **OK**.

3. Press in on the digital card **(1)**, and then remove the card from the slot **(2)**.



6 Memory modules

The computer has one memory module slot, which is located inside the hard drive bay. The memory capacity of the computer can be upgraded by replacing the existing memory module.

⚠ **WARNING!** To reduce the risk of electric shock and damage to the equipment, unplug the power cord and remove all batteries before installing a memory module.

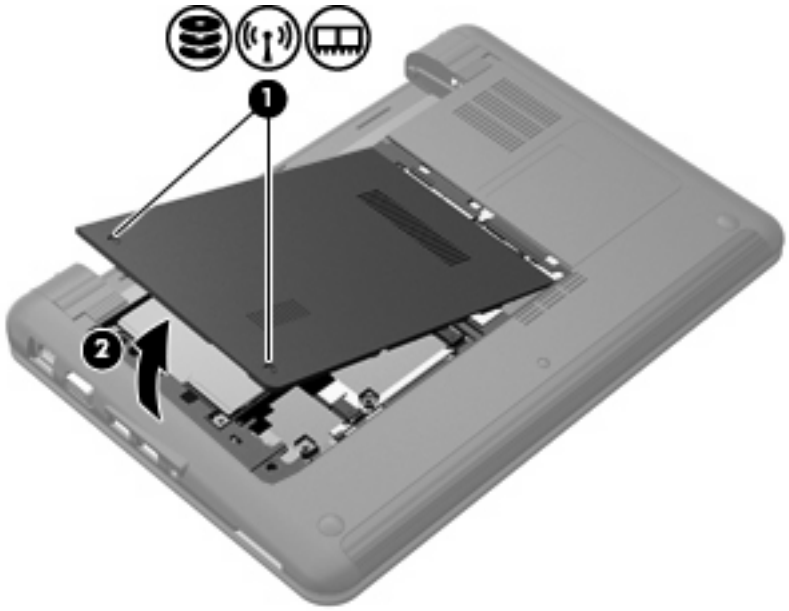
△ **CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, ensure that you are discharged of static electricity by touching a grounded metal object.

To replace a memory module:

1. Save your work.
2. Shut down the computer and close the display.

   If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the battery from the computer.
7. Using a small Phillips screwdriver, loosen the 2 hard drive cover screws **(1)**.

8. Lift the hard drive cover **(2)** away from the computer.



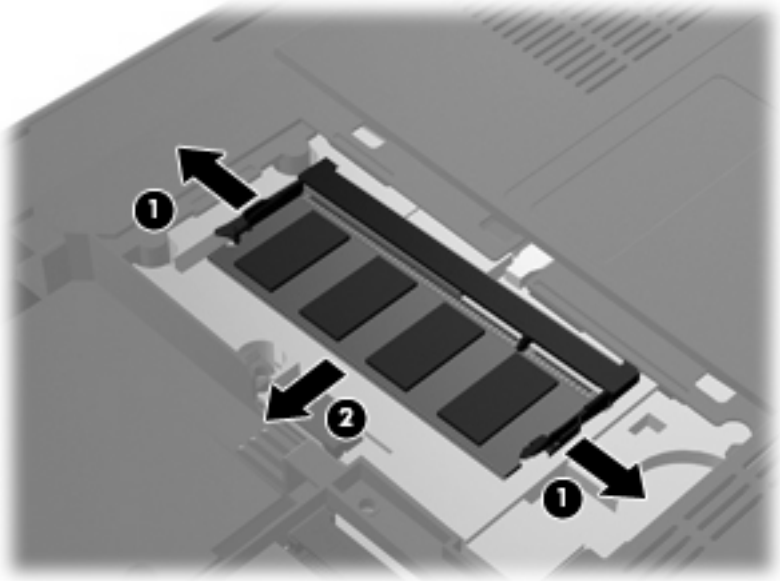
9. Remove the existing memory module:

   a. Pull away the retention clips **(1)** on each side of the memory module.

      The memory module tilts up.

   △ **CAUTION:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module.

   b. Grasp the edge of the memory module **(2)**, and gently pull the module out of the memory module slot.



To protect a memory module after removal, place it in an electrostatic-safe container.

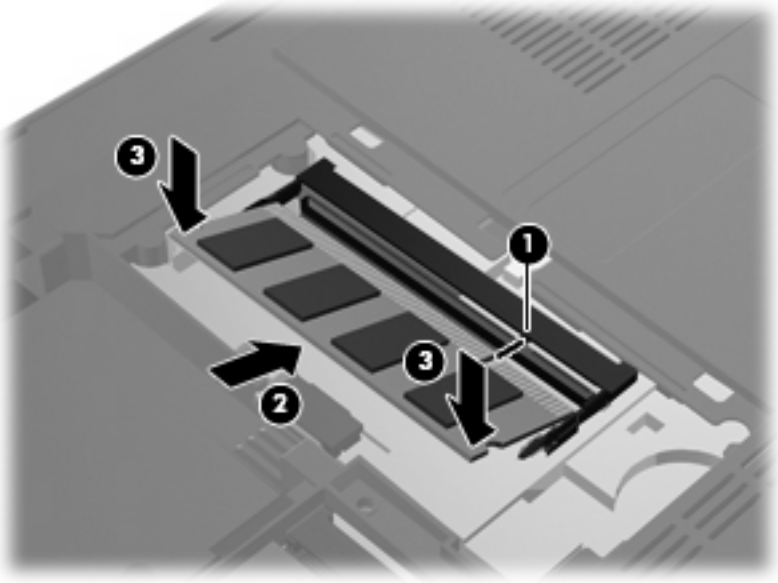
10. Insert a new memory module:

△ **CAUTION:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module, and do not bend the memory module.

   a. Align the notched edge **(1)** of the memory module with the tab in the memory module slot.

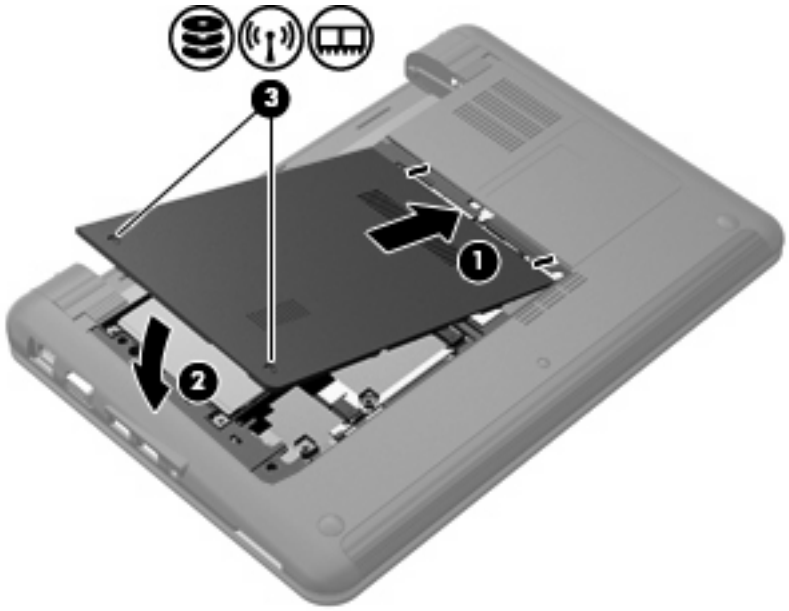
   b. With the memory module at a 45-degree angle from the surface of the hard drive bay, press the module **(2)** into the memory module slot until it is seated.

   c. Gently press the memory module **(3)** down, applying pressure to both the left and right edges of the memory module, until the retention clips snap into place.



11. Align the tabs on the hard drive cover with the notches on the computer **(1)**, and then close the cover **(2)**.

12. Tighten the 2 hard drive cover screws **(3)**.



13. Replace the battery.
14. Turn the computer right-side up, and then reconnect external power and external devices.
15. Turn on the computer.

7 Pointing devices and keyboard

Setting pointing device preferences

To access Mouse Properties, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Use Mouse Properties in Windows® to customize settings for pointing devices, such as button configuration, click speed, and pointer options.

Using pointing devices

Using the TouchPad

To move the pointer, slide your finger across the TouchPad surface in the direction you want the pointer to go. Use the TouchPad buttons like the corresponding buttons on an external mouse. To scroll up and down using the TouchPad vertical scroll zone, slide your finger up or down over the lines.

NOTE: If you are using the TouchPad to move the pointer, you must lift your finger off the TouchPad before moving it to the scroll zone. Simply sliding your finger from the TouchPad to the scroll zone will not activate the scrolling function.

Connecting an external mouse

You can connect an external USB mouse to the computer using one of the USB ports on the computer.

Using the keyboard

Using hotkeys

Hotkeys are combinations of the fn key **(1)** and one of the function keys **(2)**.

The icons on the f1 through f4, and f6, f8, f10, and f11 keys represent the hotkey functions. Hotkey functions and procedures are discussed in the following sections.

Function	Hotkey
Initiate Standby.	fn+f1
Switch the image.	fn+f2
Decrease screen brightness.	fn+f3
Increase screen brightness.	fn+f4
Initiate QuickLock.	fn+f6
Mute or restore speaker sound.	fn+f8
Decrease speaker volume.	fn+f10
Increase speaker volume.	fn+f11

To use a hotkey command on the computer keyboard, follow either of these steps:

- Briefly press the fn key, and then briefly press the second key of the hotkey command.

  – or –

- Press and hold down the fn key, briefly press the second key of the hotkey command, and then release both keys at the same time.

Initiating Standby

△ **CAUTION:** To reduce the risk of information loss, save your work before initiating Standby.

Press fn+f1 to initiate Standby.

When Standby is initiated, your information is stored in memory, the screen is cleared, and power is conserved. While the computer is in Standby, the power light blinks.

The computer must be on before you can initiate Standby.

NOTE: If a critical battery level occurs while the computer is in Standby, the computer initiates Hibernation and the information stored in memory is saved to the hard drive. The factory setting for critical battery action is Hibernate, but this setting can be changed in advanced power settings.

To exit Standby, briefly press the power button.

The function of the fn+f1 hotkey can be changed. For example, you can set the fn+f1 hotkey to initiate Hibernation instead of Standby.

NOTE: In all Windows operating system windows, references to the *sleep button* apply to the fn+f1 hotkey.

Switching the screen image

Press fn+f2 to switch the screen image among display devices connected to the system. For example, if a monitor is connected to the computer, pressing fn+f2 alternates the screen image from computer display to monitor display to simultaneous display on both the computer and the monitor.

NOTE: You must use a VGA cable (purchased separately) to connect an external display, such as a monitor or projector, to the external monitor port on the computer.

Most external monitors receive video information from the computer using the external VGA video standard. The fn+f2 hotkey can also alternate images among other devices receiving video information from the computer.

The following video transmission types, with examples of devices that use them, are supported by the fn+f2 hotkey:

- LCD (computer display)
- External VGA (most external monitors)
- HDMI (televisions, camcorders, DVD players, VCRs, and video capture cards with HDMI ports)

Decreasing screen brightness

Press fn+f3 to decrease screen brightness. Hold down the hotkey to decrease the brightness level incrementally.

Increasing screen brightness

Press fn+f4 to increase screen brightness. Hold down the hotkey to increase the brightness level incrementally.

Initiating QuickLock

Press fn+f6 to initiate the QuickLock security feature.

QuickLock protects your information by displaying the operating system Log On window. While the Log On window is displayed, the computer cannot be accessed until a Windows user password or a Windows administrator password is entered.

NOTE: Before you can use QuickLock, you must set a Windows user password or a Windows administrator password. For instructions, refer to Help and Support.

To use QuickLock, press fn+f6 to display the Log On window and lock the computer. Then follow the instructions on the screen to enter your Windows user password or your Windows administrator password and access the computer.

Muting speaker sound

Press fn+f8 to mute speaker sound. Press the hotkey again to restore speaker sound.

Decreasing speaker volume

Press fn+f10 to decrease speaker volume. Hold down the hotkey to decrease speaker volume incrementally.

Increasing speaker volume

Press fn+f11 to increase speaker volume. Hold down the hotkey to increase speaker volume incrementally.

8 Power management

Setting power options

Using power-saving states

The computer has two power-saving states enabled at the factory: Standby and Hibernation.

When Standby is initiated, the power light blinks and the screen clears. Your work is saved to memory. Exiting Standby is faster than exiting Hibernation. If the computer is in Standby for an extended period or if the battery reaches a critical battery level while in Standby, the computer initiates Hibernation.

When Hibernation is initiated, your work is saved to a hibernation file on the hard drive and the computer turns off.

△ **CAUTION:** To prevent possible audio and video degradation, loss of audio or video playback functionality, or loss of information, do not initiate Standby or Hibernation while reading from or writing to a disc or an external media card.

NOTE: You cannot initiate any type of networking connection or perform any computer functions while the computer is in Standby or in Hibernation.

Initiating and exiting Standby

The system is set at the factory to initiate Standby after 10 minutes of inactivity when running on battery power and 25 minutes of inactivity when running on external power.

Power settings and timeouts can be changed using Power Options in Windows Control Panel.

With the computer on, you can initiate Standby in any of the following ways:

- Press fn+f1.
- Select **Start > Turn Off Computer > Stand By**.

To exit Standby:

▲ Briefly press the power button.

When the computer exits Standby, the power light turns on and your work returns to the screen where you stopped working.

NOTE: If you have set a password to be required when the computer exits Standby, you must enter your Windows password before your work will return to the screen.

Initiating and exiting Hibernation

The system is set at the factory to initiate Hibernation after 30 minutes of inactivity when running on battery power or when the battery reaches a critical battery level.

NOTE: The system will not initiate Hibernation when running on external power.

NOTE: To reduce the risk of information loss, periodically save your work.

Power settings and timeouts can be changed using Power Options in Windows Control Panel.

To initiate Hibernation:

1. Select **Start > Turn Off Computer**.
2. Hold down the shift key and select **Hibernate**.

– or –

▲ If the computer is on, briefly press the power button.

To exit Hibernation:

▲ Briefly press the power button.

When the computer exits Hibernation, the power light turns on and your work returns to the screen where you stopped working.

NOTE: If you have set a password to be required when the computer exits Hibernation, you must enter your Windows password before your work will return to the screen.

Using power schemes

A power scheme is a collection of system settings that manages how the computer uses power. Power schemes can help you conserve power and maximize performance.

The following power schemes are available:

- Portable/Laptop (recommended)
- Home/Office Desk
- Presentation
- Always On
- Minimal Power Management
- Max Battery

You can change the settings of these power schemes through Power Options.

Viewing the current scheme

▲ Click the **Power Meter** icon in the notification area, at the far right of the taskbar.

– or –

Select **Start > Control Panel > Performance and Maintenance > Power Options**.

Selecting a different power scheme

▲ Click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then select a power scheme from the list.

– or –

a. Select **Start > Control Panel > Performance and Maintenance > Power Options**.

b. Select a power scheme from the **Power schemes** list.

c. Click **OK**.

Customizing power schemes

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Select a power scheme from the **Power schemes** list.
3. Modify the **Plugged in** and **Running on batteries settings** as needed.
4. Click **OK**.

Setting password protection upon exiting Standby

To set the computer to prompt for a password when the computer exits Standby, follow these steps:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Advanced** tab.
3. Select the **Prompt for password when computer resumes from Standby** check box.
4. Click **Apply**.

Using external AC power

External AC power is supplied through one of the following devices:

⚠ **WARNING!** To reduce potential safety issues, use only the AC adapter provided with the computer, a replacement AC adapter provided by HP, or a compatible AC adapter purchased from HP.

- Approved AC adapter
- Optional docking device or optional expansion product

Connect the computer to external AC power under any of the following conditions:

⚠ **WARNING!** Do not charge the computer battery while you are onboard aircraft.

- When you are charging or calibrating a battery
- When you are installing or modifying system software
- When you are writing information to a CD or DVD

When you connect the computer to external AC power, the following events occur:

- The battery begins to charge.
- If the computer is turned on, the power meter icon in the notification area changes appearance.

When you disconnect external AC power, the following events occur:

- The computer switches to battery power.
- The display brightness is automatically decreased to save battery life. To increase display brightness, press the fn+f4 hotkey or reconnect the AC adapter.

Connecting the AC adapter

⚠ **WARNING!** To reduce the risk of electric shock or damage to the equipment:

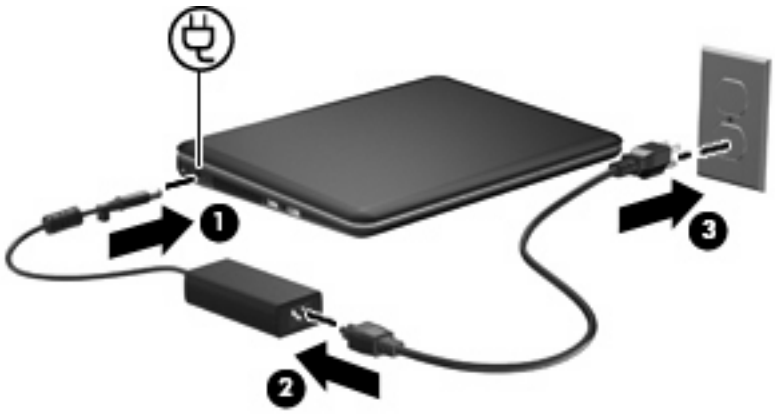
Plug the power cord into an AC outlet that is easily accessible at all times.

Disconnect power from the computer by unplugging the power cord from the AC outlet (not by unplugging the power cord from the computer).

If provided with a 3-pin attachment plug on the power cord, plug the cord into a grounded (earthed) 3-pin outlet. Do not disable the power cord grounding pin, for example, by attaching a 2-pin adapter. The grounding pin is an important safety feature.

To connect the computer to external AC power, follow these steps:

1. Plug the AC adapter into the power connector **(1)** on the computer.
2. Plug the power cord into the AC adapter **(2)**.
3. Plug the other end of the power cord into an AC outlet **(3)**.



Using battery power

When a charged battery is in the computer and the computer is not plugged into external power, the computer runs on battery power. When the computer is plugged into external AC power, the computer runs on AC power.

If the computer contains a charged battery and is running on external AC power supplied through the AC adapter, the computer switches to battery power if the AC adapter is disconnected from the computer.

NOTE: The display brightness is decreased to save battery life when you disconnect AC power. To increase display brightness, use the fn+f4 hotkey or reconnect the AC adapter.

You can keep a battery in the computer or in storage, depending on how you work. Keeping the battery in the computer whenever the computer is plugged into AC power charges the battery and also protects your work in case of a power outage. However, a battery in the computer slowly discharges when the computer is off and unplugged from external power.

WARNING! To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

Computer battery life varies, depending on power management settings, programs running on the computer, display brightness, external devices connected to the computer, and other factors.

Displaying the remaining battery charge

- Double-click the **Power Meter** icon in the notification area, at the far right of the taskbar.

  – or –

  Select **Start > Control Panel > Performance and Maintenance > Power Options > Power Meter** tab.

Most charge indicators report battery status as both a percentage and as the number of minutes of charge remaining:

- The percentage indicates the approximate amount of charge remaining in the battery.
- The time indicates the approximate running time remaining on the battery *if the battery continues to provide power at the current level*. For example, the time remaining will decrease when a DVD is playing and will increase when a DVD stops playing.

When a battery is charging, a lightning bolt icon may be superimposed over the battery icon on the Power Meter screen.

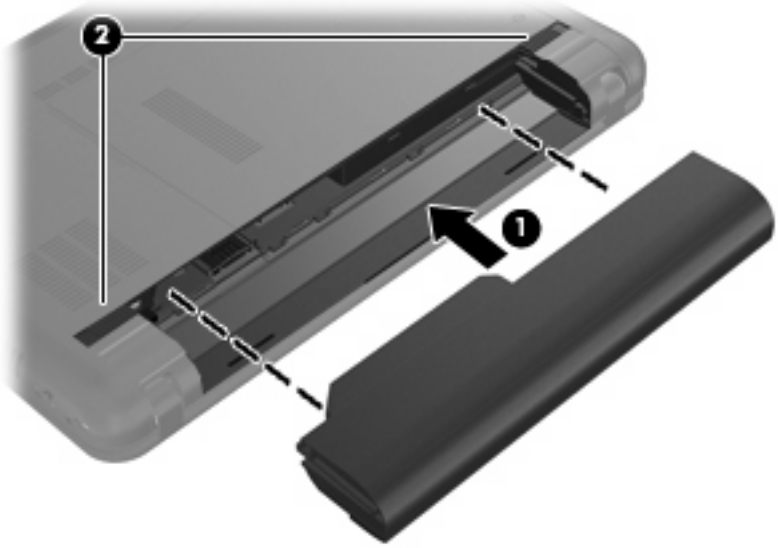
Inserting or removing the battery

CAUTION: Removing a battery that is the sole power source may cause loss of information. To prevent loss of information, save your work and initiate Hibernation or shut down the computer through Windows before removing the battery.

To insert the battery:

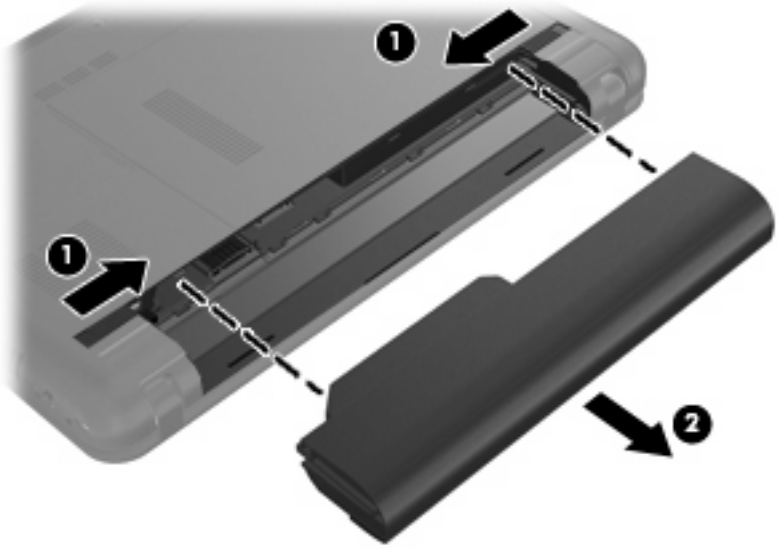
1. Turn the computer upside down on a flat surface.

2. Align the tabs on the battery with the notches on the computer **(1)**, and then insert the battery into the battery bay. The battery release latches **(2)** automatically lock the battery into place.



To remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latches **(1)** to release the battery, and then remove the battery **(2)**.



Charging a battery

⚠ **WARNING!** Do not charge the computer battery while you are onboard aircraft.

The battery charges whenever the computer is plugged into external power through an AC adapter, an optional power adapter, an optional docking device, or an optional expansion product.

The battery charges whether the computer is off or in use, but it charges faster when the computer is off.

Charging may take longer if a battery is new, has been unused for 2 weeks or more, or is much warmer or cooler than room temperature.

To prolong battery life and optimize the accuracy of battery charge displays, follow these recommendations:

- If you are charging a new battery, charge it fully before turning on the computer.
- Charge the battery until the battery light turns off.

NOTE: If the computer is on while the battery is charging, the power meter in the notification area may show 100 percent charge before the battery is fully charged.

- Allow the battery to discharge below 5 percent of a full charge through normal use before charging it.
- If the battery has been unused for one month or more, calibrate the battery instead of simply charging it.

The battery light displays charge status:

- On: The battery is charging.
- Blinking: The battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.
- Off: The battery is fully charged, in use, or not installed.

Maximizing battery discharge time

Battery discharge time varies depending on the features you use while on battery power. Maximum discharge time gradually shortens, as the battery storage capacity naturally degrades.

Tips for maximizing battery discharge time:

- Decrease the brightness on the display.
- Remove the battery from the computer when it is not being used or charged.
- Store the battery in a cool, dry location.

Managing low battery levels

The information in this section describes the alerts and system responses set at the factory. Some low-battery alerts and system responses can be changed using Power Options in Windows Control Panel. Preferences set using Power Options do not affect lights.

Identifying low battery levels

When a battery that is the sole power source for the computer reaches a low battery level, the battery light blinks.

If a low battery level is not resolved, the computer enters a critical battery level, and the battery light blinks rapidly.

The computer takes the following actions for a critical battery level:

- If Hibernation is enabled and the computer is on or in Standby, the computer initiates Hibernation.
- If Hibernation is disabled and the computer is on or in Standby, the computer remains briefly in Standby, and then shuts down and loses any unsaved information.

Resolving a low battery level

△ **CAUTION:** To reduce the risk of losing information when the computer reaches a critical battery level and has initiated Hibernation, do not restore power until the power lights turn off.

Resolving a low battery level when external power is available

▲ Connect one of the following devices:

- AC adapter
- Optional expansion product or optional docking device
- Optional power adapter

Resolving a low battery level when a charged battery is available

1. Turn off the computer or initiate Hibernation.
2. Remove the discharged battery, and then insert a charged battery.
3. Turn on the computer.

Resolving a low battery level when no power source is available

▲ Initiate Hibernation.

– or –

Save your work and shut down the computer.

Resolving a low battery level when the computer cannot exit Hibernation

When the computer lacks sufficient power to exit Hibernation, follow these steps:

1. Insert a charged battery or plug the computer into external power.
2. Exit Hibernation by briefly pressing the power button.

Calibrating a battery

Calibrate a battery under the following conditions:

- When battery charge displays seem inaccurate
- When you observe a significant change in battery run time

Even if a battery is heavily used, it should not need to be calibrated more than once a month. It is also not necessary to calibrate a new battery.

Step 1: Fully charge the battery

⚠ **WARNING!** Do not charge the computer battery while you are onboard aircraft.

NOTE: The battery charges whether the computer is off or in use, but it charges faster when the computer is off.

To fully charge the battery:

1. Insert the battery into the computer.
2. Connect the computer to an AC adapter, optional power adapter, optional expansion product, or optional docking device, and then plug the adapter or device into external power.

   The battery light on the computer turns on.
3. Leave the computer plugged into external power until the battery is fully charged.

   The battery light on the computer turns off.

Step 2: Disable Hibernation and Standby

1. Right-click the **Power Meter** icon in the notification area, at the far right of the taskbar, and then click **Adjust Power Properties**.

   – or –

   Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Record the 4 settings listed in the **Running on batteries** column and the **Plugged in** column so that you can reset them after the calibration.
3. Set the 4 options to **Never**.
4. Click **OK**.

Step 3: Discharge the battery

The computer must remain on while the battery is being discharged. The battery can discharge whether or not you are using the computer, but the battery will discharge faster while you are using it.

- If you plan to leave the computer unattended during the discharge, save your information before beginning the discharge procedure.
- If you use the computer occasionally during the discharge procedure and have set energy-saving timeouts, expect the following performance from the system during the discharge process:
  - The monitor will not turn off automatically.
  - Hard drive speed will not decrease automatically when the computer is idle.
  - System-initiated Hibernation will not occur.

To discharge a battery:

1. Unplug the computer from its external power source, but do *not* turn off the computer.
2. Run the computer on battery power until the battery is discharged. The battery light begins to blink when the battery has discharged to a low battery level. When the battery is discharged, the battery light turns off and the computer shuts down.

Step 4: Fully recharge the battery

To recharge the battery:

1. Plug the computer into external power and maintain external power until the battery is fully recharged. When the battery is recharged, the battery light on the computer turns off.

   You can use the computer while the battery is recharging, but the battery will charge faster if the computer is off.

2. If the computer is off, turn it on when the battery is fully charged and the battery light has turned off.

Step 5: Reenable Hibernation and Standby

△ **CAUTION:** Failure to reenable Hibernation after calibration may result in a full battery discharge and information loss if the computer reaches a critical battery level.

1. Select **Start > Control Panel > Performance and Maintenance > Power Options**.
2. Reenter the settings that you recorded for the items in the **Plugged in** column and the **Running on batteries** column.
3. Click **OK**.

Conserving battery power

- Select low power-use settings through Power Options in Windows Control Panel.
- Turn off wireless and local area network (LAN) connections and exit modem applications when you are not using them.
- Disconnect external devices that are not plugged into an external power source, when you are not using them.
- Stop, disable, or remove any external media cards that you are not using.
- Use the fn+f3 and fn+f4 hotkeys to adjust screen brightness as needed.
- If you leave your work, initiate Standby or Hibernation, or shut down the computer.

Storing a battery

△ **CAUTION:** To prevent damage to a battery, do not expose it to high temperatures for extended periods of time.

If a computer will be unused and unplugged from external power for more than 2 weeks, remove the battery and store it separately.

To prolong the charge of a stored battery, place it in a cool, dry place.

NOTE: A stored battery should be checked every 6 months. If the capacity is less than 50 percent, recharge the battery before returning it to storage.

Calibrate a battery before using it if it has been stored for one month or more.

Disposing of a used battery

⚠ **WARNING!** To reduce the risk of fire or burns, do not disassemble, crush, or puncture; do not short external contacts; do not dispose of in fire or water.

Refer to the *Regulatory, Safety and Environmental Notices* for battery disposal information.

Shutting down the computer

△ **CAUTION:** Unsaved information will be lost when the computer is shut down.

The Shut Down command closes all open programs, including the operating system, and then turns off the display and computer.

Shut down the computer under any of the following conditions:

- When you need to replace the battery or access components inside the computer
- When you are connecting an external hardware device that does not connect to a USB port
- When the computer will be unused and disconnected from external power for an extended period

To shut down the computer, follow these steps:

NOTE: If the computer is in Standby or in Hibernation, you must first exit Standby or Hibernation before shutdown is possible.

1. Save your work and close all open programs.
2. Select **Start > Turn Off Computer > Turn Off**.

If the computer is unresponsive and you are unable to use the preceding shutdown procedures, try the following emergency procedures in the sequence provided:

- Press ctrl+alt+delete. Then, select **Shut Down > Turn Off**.
- Press the power button and hold for at least 5 seconds.
- Disconnect the computer from external power and remove the battery.

9 Security

Protecting the computer

Standard security features provided by the Windows operating system and the non-Windows Setup Utility can protect your personal settings and data from a variety of risks.

Follow the procedures in this chapter to use the following features:

- Passwords
- Firewall software
- Antivirus support (Norton Internet Security)
- Critical security updates

NOTE: Security solutions are designed to act as deterrents, but they may not deter software attacks or prevent the computer from being mishandled or stolen.

NOTE: Before you send your computer for service, remove all password settings.

Computer risk	Security feature
Unauthorized use of the computer	• QuickLock • Power-on password
Unauthorized access to data	• Firewall software • Windows updates
Unauthorized access to Setup Utility, BIOS settings, and other system identification information	Administrator password
Ongoing or future threats to the computer	Critical security updates from Microsoft
Unauthorized access to a Windows user account	User password

Using passwords

A password is a group of characters that you choose to secure your computer information. Several types of passwords can be set, depending on how you want to control access to your information. Passwords can be set in Windows or in the non-Windows Setup Utility preinstalled on the computer.

CAUTION: To prevent being locked out of the computer, record each password you set. Because most passwords are not displayed as they are set, changed, or deleted, it is essential to record each password immediately and store it in a secure place.

You can use the same password for a Setup Utility feature and for a Windows security feature. You can also use the same password for more than one Setup Utility feature.

Use the following guidelines when setting a password in Setup Utility:

- A password can be any combination of up to 8 letters and numbers and is case sensitive.
- A password set in Setup Utility must be entered at a Setup Utility prompt. A password set in Windows must be entered at a Windows prompt.

Use the following tips for creating and saving passwords:

- When creating passwords, follow requirements set by the program.
- Write down your passwords and store them in a secure place away from the computer.
- Do not store passwords in a file on the computer.
- Do not use your name or other personal information that could be easily discovered by an outsider.

The following sections list Windows and Setup Utility passwords and describe their functions. For additional information about Windows passwords, such as screen-saver passwords, select **Start > Help and Support**.

Passwords set in Windows

Password	Function
Administrator password	Protects administrator-level access to computer contents. **NOTE:** This password cannot be used to access Setup Utility contents.
User password	Protects access to a Windows user account. It also protects access to the computer contents and must be entered when you exit Standby or Hibernation.
QuickLock	Protects the computer by requiring a password to be entered in the Windows Log On dialog box before you access the computer. After you set a user or administrator password, follow these steps: 1. Initiate QuickLock by pressing fn+f6. 2. Exit QuickLock by entering your Windows user or administrator password.

Passwords set in Setup Utility

Password	Function
Administrator password*	• Protects access to Setup Utility. • After this password is set, it must be entered each time you access Setup Utility. **CAUTION:** If you forget your administrator password, you cannot access Setup Utility.

Password	Function
Power-on password*	• Protects access to the computer contents. • After this password is set, it must be entered each time you turn on or restart the computer, or exit Hibernation. **CAUTION:** If you forget your power-on password, you cannot turn on or restart the computer, or exit Hibernation.
*For details about each of these passwords, refer to the following topics.	

Administrator password

Your administrator password protects the configuration settings and system identification information in Setup Utility. After this password is set, you must enter it each time you access Setup Utility.

Your administrator password is not interchangeable with an administrator password set in Windows, nor is it displayed as it is set, entered, changed, or deleted. Be sure that you record your password and store it in a safe place.

Managing an administrator password

To set, change, or delete this password, follow these steps:

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Security > Set Administrator Password**, and then press enter.
   - To set an administrator password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To change an administrator password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To delete an administrator password, type your current password in the **Enter Password** field, and then press enter 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes go into effect when the computer restarts.

Entering an administrator password

At the **Enter Password** prompt, type your administrator password, and then press enter. After 3 unsuccessful attempts to enter the administrator password, you must restart the computer and try again.

Power-on password

Your power-on password prevents unauthorized use of the computer. After this password is set, it must be entered each time you turn on or restart the computer, or exit Hibernation. A power-on password is not displayed as it is set, entered, changed, or deleted.

Managing a power-on password

To set, change, or delete this password, follow these steps:

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Security > Set Power-On Password**, and then press enter.
   - To set a power-on password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To change a power-on password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To delete a power-on password, type your current password in the **Enter Current Password** field, and then press enter 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes go into effect when the computer restarts.

Entering a power-on password

At the **Enter Password** prompt, type your password, and then press enter. After 3 unsuccessful attempts to enter the password, you must restart the computer and try again.

Using antivirus software

When you use the computer for e-mail or Internet access, you expose it to computer viruses that can disable the operating system, programs, or utilities or cause them to function abnormally.

Antivirus software can detect most viruses, destroy them, and in most cases, repair damage they have caused. To provide ongoing protection against newly discovered viruses, antivirus software must be kept up to date.

Norton Internet Security, an antivirus program, is preinstalled on the computer.

- Your version of Norton Internet Security includes 60 days of free updates. It is strongly recommended that you protect the computer against new viruses beyond 60 days by purchasing extended update service. Instructions for using and updating Norton Internet Security software and for purchasing extended update service are provided within the program.
- To access Norton Internet Security, or to get more information about it, select **Start > All Programs > Norton Internet Security**.

NOTE: HP recommends that you always update the antivirus software to help protect your computer.

NOTE: For more information about computer viruses, type `viruses` in the Search box in Help and Support.

Using firewall software

When you use the computer for e-mail, network, or Internet access, unauthorized persons may be able to gain access to the computer, your personal files, and information about you. Use the firewall software preinstalled on the computer to protect your privacy.

Firewall features include logging and reporting of network activity, and automatic monitoring of all incoming and outgoing traffic. Refer to the firewall user guide or contact your firewall manufacturer for more information.

NOTE: Under some circumstances a firewall can block access to Internet games, interfere with printer or file sharing on a network, or block authorized e-mail attachments. To temporarily resolve the problem, disable the firewall, perform the task that you want to perform, and then reenable the firewall. To permanently resolve the problem, reconfigure the firewall.

Installing critical updates

△ **CAUTION:** Microsoft sends alerts regarding critical updates. To protect the computer from security breaches and computer viruses, install all critical updates from Microsoft as soon as you receive an alert.

Updates to the operating system and other software may have become available after the computer was shipped. To be sure that all available updates are installed on the computer, observe these guidelines:

- Run Windows Update as soon as possible after you set up your computer. Use the update link at **Start > All Programs > Windows Update**.
- Run Windows Update at regular intervals, such as once a month.
- Obtain updates to Windows and other Microsoft programs, as they are released, from the Microsoft Web site and through the updates link in Help and Support.

10 Software updates

Updated versions of the software provided with your computer may be available on the HP Web site.

Most software and BIOS updates on the HP Web site are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

To update the software, follow these steps, which are explained in the remainder of this guide:

1. Identify your computer model, product category, and series or family. Prepare for a system BIOS update by identifying the BIOS version currently installed on the computer.

   If your computer is connected to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

   NOTE: The computer system BIOS is stored on the system ROM. The BIOS initializes the operating system, determines how the computer will interact with the hardware devices, and provides for data transfer among hardware devices, including the time and date.

2. Access the updates on the HP Web site at http://www.hp.com.

3. Install the updates.

Updating the BIOS

To update the BIOS, first determine what BIOS version you currently have and then download and install the new BIOS.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed by opening Setup Utility.

To display the BIOS information:

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. If Setup Utility does not open with the system information displayed, use the arrow keys to select the **Main** menu.

   When the Main menu is selected, BIOS and other system information is displayed.
3. To exit Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Downloading a BIOS update

△ **CAUTION:** To prevent damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Standby or Hibernation.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

To download a BIOS update:

1. Access the page on the HP Web site that provides software for your computer:

   Select **Start > Help and Support**, and then select the software and drivers update.
2. Follow the instructions on the screen to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:

   a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the instructions on the screen to download your selection to the hard drive.

Make a note of the path to the location on your hard drive where the BIOS update is to be downloaded. you must access this path when you are ready to install the update.

NOTE: If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

1. Open Windows Explorer by selecting **Start > My Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The BIOS installation begins.
5. Complete the installation by following the instructions on the screen.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

Updating programs and drivers

To download and install software other than a BIOS update, follow these steps:

1. Access the page on the HP Web site that provides software for your computer:

   Select **Start > Help and Support**, and then select the software and drivers update.

2. Follow the instructions on the screen to find the software you want to update.

3. At the download area, select the software you want to download and follow the instructions on the screen.

   NOTE: Make a note of the path to the location on your hard drive where the software is to be downloaded. You must access this path when you are ready to install the software.

4. When the download is complete, open Windows Explorer by selecting **Start > My Computer**.

5. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).

6. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

7. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The installation begins.

8. Complete the installation by following the instructions on the screen.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

11 Setup Utility

Starting Setup Utility

Setup Utility is a ROM-based information and customization utility that can be used even when your Windows operating system is not working.

The utility reports information about the computer and provides settings for startup, security, and other preferences.

To start Setup Utility:

▲ Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.

Using Setup Utility

Changing the language of Setup Utility

The following procedure explains how to change the language of Setup Utility. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Use the arrow keys to select a language, and then press enter.
4. When a confirmation prompt with your language selected is displayed, press enter.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change goes into effect immediately.

Navigating and selecting in Setup Utility

Because Setup Utility is not Windows based, it does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or f5 or f6.

- To select an item, press enter.
- To close a text box or return to the menu display, press esc.
- To display additional navigation and selection information while Setup Utility is open, press f1.

Displaying system information

The following procedure explains how to display system information in Setup Utility. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Restoring default settings in Setup Utility

The following procedure explains how to restore the Setup Utility default settings. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer, and then pressing f10 while the “F10 = BIOS Setup Options” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press enter.
3. When the Setup Confirmation is displayed, press enter.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

The Setup Utility default settings go into effect when the computer restarts.

NOTE: Your password, security, and language settings are not changed when you restore the factory default settings.

Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

- To exit Setup Utility and save your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

- To exit Setup Utility without saving your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

After either choice, the computer restarts in Windows.

Setup Utility menus

The menu tables in this section provide an overview of Setup Utility options.

NOTE: Some of the Setup Utility menu items listed in this chapter may not be supported by your computer.

Main menu

Select	To do this
System information	• View and change the system time and date. • View identification information about the computer. • View specification information about the processor, memory size, and system BIOS.

Security menu

Select	To do this
Administrator password	Enter, change, or delete an administrator password.
Power-On Password	Enter, change, or delete a power-on password.

System Configuration menu

Select	To do this
Language Support	Change the Setup Utility language.
Processor C4 State	Enable/disable the processor C4 sleep state.
Boot Options	Set the following boot options: • f10 and f12 Delay (sec.)—Set the delay for the f10 and f12 functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20). • HP QuickWeb—Enable/disable HP QuickWeb at boot time. Set the delay for the user to start Windows. • Internal Network Adapter boot—Enable/disable boot from Internal Network Adapter. • Boot Order—Set the boot order for: ◦ Internal hard drive (select models only) ◦ USB Floppy ◦ USB CD/DVD ROM Drive ◦ USB flash drive ◦ USB Hard drive

Select	To do this
	◦ USB Card Reader ◦ Network adapter **NOTE:** Only the devices attached to the system appear in the boot order menu.

Diagnostics menu

Select	To do this
Primary Hard Disk Self Test	Run a comprehensive self-test on the hard drive.
Memory Test	Run a diagnostic test on the system memory.

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